REMARKS

The applicants have carefully considered the office action of January 5, 2009. By way of this Response, claims 1, 9, 17, 25, 37, 39 and 40 have been amended, and claim 38 has been canceled. The applicants respectfully submit that all claims are fully supported and that no new matter has been added. In view of the foregoing amendments and the following remarks, the applicants respectfully request reconsideration of this application.

Claim Objections

Claims 38 and 39 were objected to for depending on claim 1 rather than properly depending on claim 37. Per this Response, claim 38 has been canceled and claim 39 has been amended to properly depend on independent claim 37.

Rejections under 35 U.S.C. §101

Claims 1-5, 7, 8, 33 and 37-42 were rejected under 35 U.S.C. §101 as directed to non-statutory subject matter. Per this Response, claims 1, 37 and 40 are amended to comply with the machine-or-transformation test set forth by the Federal Circuit in *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008). *Bilski's* machine-or-transformation test provides that a claim to a process, or method is statutory under 35 U.S.C. §101 when the claim is either tied to a particular machine or transforms an article. (*Id.* at 961.). Additionally, *Bilski* explains that a patentable transformation of an article includes the transformation of something that is physical, as well as the transformation of data or signals representing something that is physical. (*Id.* at 962-963, 964). As explained below, independent claims 1, 37 and 40 meet one or both prongs of the machine-or-transformation test.

Independent claim 1 recites, in part, a computer implemented method for segmenting a population that outputs a substitute level tree having substitute split values to a user. As such, independent claim 1 transforms data representative of the population into the substitute level tree and is, thus, data representative of physical object (i.e., the population).

Independent claim 37 recites, in part, a computer implemented method to segment a population that defines a first segmentation tree, receives an alternate data set, and defines a second segmentation tree in accordance with the alternate data set. Claim 37 transforms data representative of the population as the second segmentation tree, which is fairly construed as

a physical object in view of *Bilski*. Accordingly, claim 37 is statutory because it has a transformative effect on data representative of physical objects.

Independent claim 40 recites, in part, a computer implemented method to segment a population that defines a segmentation tree in accordance with a base level data set, receives an alternate level data set, and outputs an alternate level segmentation tree to a user, the alternate level segmentation tree representative of the population. Claim 40 transforms data representative of the population as the alternate level segmentation tree, which is fairly construed as a physical object because it is representative of the population. Accordingly, the applicants respectfully submit that claim 40 is statutory.

For at least these reasons, the applicants respectfully request that the rejections under 35 U.S.C. §101 be withdrawn for claims 1, 37 and 40, and all claims dependent thereon.

The Rejections Under 35 U.S.C. §102

In the office action, claim 1 was rejected as being anticipated by Miller et al. (U.S. Patent Application No. 2002/0184077 A1, hereinafter "Miller"). The applicants respectfully traverse this rejection.

Claim 1

The applicants respectfully submit that Miller fails to anticipate claim 1 in, at least, four (4) separate instances.

First, the office action contends that Miller teaches defining a set of alternative level variables to create a substitute level tree via Miller's partition module (element number 510) of FIG. 5.

Second, the office action contends that Miller teaches a set of alternative level variables useable as substitutes in the nodes of the base level population segmentation tree via paragraph [0021] of Miller.

Third, the office action contends that Miller teaches determining substitute split values for each node of the substitute level tree to enable up and down shifting between levels of different precision via paragraph [0021] and FIG. 5.

Finally, the office action contends that Miller teaches calculating substitute split values to maintain a percentage split value of the substitute level tree that is equal to a percentage split value of the base level population segmentation tree.

Generally speaking, Miller describes a method for classifying consumers in clusters of similar behavioral and demographic characteristics. (*Miller*, Abstract). Consumer cluster sets are generated by generating classification trees based on demographic and behavioral data, in which consumers in each cluster have substantially similar behavioral and demographic characteristics to each other, but different behavioral and demographic characteristics from consumers in other clusters. (*Miller*, paragraphs [0018] and [0019]). Miller employs a partitioning program that optimizes a segmentation based on behavioral and demographic factors, and combinations of input variables are searched to identify the optimal combination resulting in a set of terminal nodes. (*Miller*, paragraph [0020]). When starting with a given population, Miller employs a plurality of decisions to further split that population at a node, which results in populations at two subsequent nodes further down the classification tree. (*Miller*, FIG. 3 and paragraph [0021]). Additionally, starting with the same given population, Miller describes employing alternate decisions to split that population into alternate nodes, which generates another classification tree having different nodes (nodes and terminal nodes). (*Miller*, FIGS. 3 and 4 and paragraphs [0021] and [0022]). After a plurality of classification trees has been generated, Miller describes searching those classification trees to determine an optimal combination of the input variables, in which the optimum combination is evidenced by each terminal node being homogeneous in both behavior and demographics. (*Miller*, paragraph [0023]).

As discussed above, while the office action contends that Miller teaches defining a set of alternative level variables to create a substitute level tree (*see office action*, page 4, section 7, which points out Miller's partitioning module of FIG. 5), the applicants respectfully submit that the partitioning module, as described by Miller in paragraphs [0045] and [0046], defines segments by way of a greedy algorithm to sequentially split data into partitions that create local maxima. However, Miller does not further describe or suggest that the partitioning module, and/or any other method or structure, creates a substitute level tree.

Moreover, the applicants note that the instant office action does not further address all the recitations of independent claim 1. More specifically, amended independent claim 1 recites, in part, defining a set of alternative level variables to create a substitute level tree having a substitute precision different from the base precision. The applicants respectfully submit that Miller fails to teach or suggest defining a set of alternative level variables to create a substitute level tree having a substitute precision different from the base precision.

Instead, Miller describes starting with a given population and yielding splits in that population via different decisions (see the Decisions beneath each Node in FIGS. 3 and 4 of Miller). Such decisions are not fairly construed as alternate level variables, much less alternate level variables to create a substitute level tree because, at least, Miller is silent to any circumstance in which one or more trees may have a different level of precision when compared to each other. While Miller creates a plurality of alternate classification trees, such trees are the result of employing one or more different decisions at each node (*see Miller*, FIGS. 3 and 4 and paragraphs [0021] through [0022]), but Miller does not teach or suggest a concept related to a level of such trees in which each level may have a precision that differs from one classification tree to another classification tree. Miller also fails to teach or suggest that any alternate trees generated by the decisions are substitute level trees. In particular, Miller's segmentation system classifies households (*see Miller*, paragraph [0017]), but does not indicate one or more alternate levels of classification. As such, Miller is unrelated to alternative level variables and/or creating substitute level trees having a substitute precision different from the base precision.

As also discussed above, Miller fails to teach or suggest that the set of alternative level variables are useable as substitutes in the nodes of the base level population segmentation tree. The office action appears to find support for the aforementioned recitation in paragraph [0021] of Miller in that populations are split according to a plurality of decisions (*see office action*, page 4). While the plurality of classification trees generated by Miller are the result of different decisions in each node, Miller is silent to variables useable as substitutes in any population segmentation tree, much less any segmentation tree related to a base level. As described above, because Miller is unconcerned with segmentation of one or more populations that may have differing levels and/or levels having differing precision, Miller does not teach or suggest a set of alternative level variables, much less alternative level variables useable as substitutes of a base level population segmentation tree.

As discussed above, at least a third aspect of independent claim 1 that the applicants respectfully submit Miller fails to teach or suggest is the office action contention that Miller teaches determining substitute split values for each node of the substitute level tree to enable up and down shifting between levels of different precision. (*see office action*, page 4, section 7, referring to Miller's paragraph [0022]). Amended claim 1 recites, in part, determining

substitute split values for each node of the substitute level tree to enable up and down shifting between levels of the base precision and the substitute precision.

While the office action correctly points out that classification tree splits are based on decisions at one or more nodes, such splits are unrelated to up and down shifting between levels of any alternate precision, much less levels of the base precision and the substitute precision. In fact, Miller is silent to alternate levels, much less that the levels may have varying degrees of precision. Instead, Miller describes creating a plurality of classification trees using different decisions, and then searching those classification trees to determine an optimal combination, but Miller pays no regard to a circumstance in which one or more trees have differing levels, levels of different precision, and/or enabling up and down shifting.

A fourth aspect of independent claim 1 that the applicants respectfully submit Miller fails to anticipate relates to the instant office action contention that Miller teaches calculating the substitute split values to maintain a percentage split value of the substitute level tree that is equal to a percentage split value of the base level population segmentation tree. (*see office action*, pages 4 through 5, section 7). While Miller describes generating classification trees, Miller fails to teach or suggest maintaining any relationship between those trees, much less maintaining a percentage split value of the substitute level tree equal to a percentage split value of the base level population segmentation tree. Contrary to the office action assertion that nodes 2 and 3 of Miller represent an equal percentage split using the same population node 1, Miller is silent to creating splits that are equal and/or creating splits having any percentage reference to another classification tree. In fact, the decisions described by Miller facilitate population splits, but Miller is silent to specifying that such splits are equal or somehow related to other trees based on a percentage comparison. At most, Miller describes that, for each classification tree, Zhang's methodology is employed to select a split that maximizes a Gini impurity measure. (*Miller*, paragraphs [0024] through [0044]).

Accordingly, at least because Miller fails to teach or suggest defining a base level population segmentation tree, defining a set of alternative level variables to create a substitute level tree, the set of alternative level variables useable as substitutes in the nodes of the base level population segmentation tree, determining substitute split values for each node of the substitute level tree to enable up and down shifting between levels of different precision, and calculating the substitute split values to maintain a percentage split value of the substitute

level tree that is equal to a percentage split value of the base level population segmentation tree, independent claim 1 is allowable over Miller. Reconsideration is respectfully requested.

Claims 9, 17 and 25

The applicants also submit that independent claims 9, 17 and 25 are allowable over the art of record for reasons similar to those set forth above in connection with independent claim 1. In particular, independent claim 9 relates to a system for segmenting a population and recites, in part, means for defining a base level population segmentation tree, means for defining a set of alternative level variables to create a substitute level tree, a means for determining substitute split values for each node of the substitute level tree to enable up and down shifting between levels of different precision, and the substitute split values calculated to maintain a percentage split value for each node of the substitute level tree that is equal to a percentage split value in each corresponding node of the base level population segmentation tree. The applicants respectfully submit that the cited art fails to teach or suggest, means for defining a base level population segmentation tree, means for defining a set of alternative level variables to create a substitute level tree, means for determining substitute split values for each node of the substitute level tree to enable up and down shifting between levels of different precision, and the substitute split values calculated to maintain a percentage split value for each node of the substitute level tree that is equal to a percentage split value in each corresponding node of the base level population segmentation tree, as recited in claim 9.

Independent claim 17 relates to a software system to execute on a computer system for segmenting a population and recites, in part, a base segmentation tree defining module for defining a base level population segmentation tree, an alternative level variable defining module for defining a set of alternative level variables to create a substitute level tree, and a substitute split value determining module for determining substitute split values for each node to enable up and down shifting between levels of different precision, the substitute split value determining module to calculate the substitute split values that maintain a percentage split value of the substitute level tree that is equal to a percentage split value of the base segmentation tree. The applicants respectfully submit that the cited art fails to teach or suggest a base segmentation tree defining module for defining a base level population segmentation tree, an alternative level variable defining module for defining a set of alternative level variables to create a substitute level tree, and a substitute split value

determining module for determining substitute split values for each node to enable up and down shifting between levels of different precision, the substitute split value determining module to calculate the substitute split values that maintain a percentage split value of the substitute level tree that is equal to a percentage split value of the base segmentation tree, as recited in claim 17.

Independent claim 25 relates to a machine accessible medium having instructions stored thereon and recites, in part, defining a base level population segmentation tree, defining a set of alternative level variables to create a substitute level tree, determining substitute split values for each node of the tree to enable up and down shifting between levels of different precision, and calculating the substitute split values to maintain a percentage split value of the substitute level tree that is equal to a percentage split value of the base level population segmentation tree. The applicants respectfully submit that the cited art fails to teach or suggest defining a base level population segmentation tree, defining a set of alternative level variables to create a substitute level tree, determining substitute split values for each node of the tree to enable up and down shifting between levels of different precision, and calculating the substitute split values to maintain a percentage split value of the substitute level tree that is equal to a percentage split value of the base level population segmentation tree, as recited in claim 25.

Claim 37

In the office action, claim 37 was rejected as being anticipated by Miller. The applicants respectfully traverse this rejection based on, at least, three (3) separate instances.

First, the office action contends that Miller teaches a method to segment a population including receiving a base level data set having a first precision based on Miller's FIG. 3 and Node splits via one or more Decisions.

Second, the office action contends that Miller teaches receiving an alternate data set having a second precision different from the first precision of a base level data set via Miller's FIG. 4 showing the (same) population at Node 1 being split based on other Decisions.

Third, the office action contends that Miller teaches defining a plurality of alternate level variables to facilitate at least one of upshifting or downshifting relative to the base level

data set via Miller's illustration of Nodes 2-13 of FIG. 4 having a different arrangement as those in FIG. 3.

The applicants respectfully submit that, in view of the first contention by the instant office action, Miller fails to teach or suggest receiving a base level data set having a first precision by way of Miller's FIG. 3, which illustrates node population splits. Instead, the applicants respectfully submit that Miller illustrates a classification tree having a population at Node 1, which is further split based on Decision 1, and that any additional classification trees (e.g., see FIG. 4 of *Miller*) described by Miller also employ the same initial population. As such, Miller does not further teach or suggest that the plurality of classification trees receive a data set indicative of a particular level, much less a base level having a first precision.

Additionally, the applicants respectfully submit that, in view of the second contention by the instant office action, Miller fails to teach or suggest receiving an alternate data set having a second precision different from the first precision of the base level data set. Instead, the applicants respectfully submit that the populations at beginning nodes of Miller are both identical and devoid of any characteristics related to a level or a precision. To the extent that Miller describes a plurality of classification trees having a population at a first node, Miller fails to teach or suggest that such nodes are further associated with one or more varying degrees of precision in view of each other. Accordingly, Miller fails to teach or suggest receiving an alternate data set having a second precision different from the first precision of the base level data set.

Moreover, the applicants respectfully submit that, in view of the third contention by the instant office action, Miller fails to teach or suggest defining a plurality of alternate level variables to facilitate at least one of upshifting or downshifting relative to the base level data set. While the office action correctly points out that classification tree splits are based on decisions at one or more nodes (see Nodes of FIGS. 3 and 4), and that different decisions result in different node arrangements (see Node splits of FIGS. 3 and 4), such splits are unrelated to any shifting in view of a starting population, levels, or much less upshifting or downshifting relative to the base level data set.

Further, amended claim 37 now recites, in part, defining a second segmentation tree in accordance with the alternate data set. The applicants respectfully submit that Miller fails to teach or suggest defining a second segmentation tree in accordance with the alternate data set.

Despite the fact that Miller describes generating a plurality of classification trees, any such classification trees generated by Miller beyond a first classification tree are in view of the same population. Accordingly, Miller pays no regard to any circumstance in which other population data sets may be employed, much less an alternate data set having a second precision different from the first precision of the base level data set. As such, Miller can not and does not define a second segmentation tree in accordance with the alternate data set.

Claim 40

The applicants also submit that independent claim 40 is allowable over the art of record for reasons similar to those set forth above in connection with independent claim 37. In particular, independent claim 40 recites, in part, a method to segment a population including receiving a base level data set having a first precision, defining a segmentation tree in accordance with the base level data set, calculating a percentage split for each of the plurality of decision nodes of the segmentation tree, receiving an alternate level data set having a second precision, and calculating an alternative level value to maintain the percentage split for each decision node. The applicants respectfully submit that the cited art fails to teach or suggest receiving a base level data set having a first precision, defining a segmentation tree in accordance with the base level data set, calculating a percentage split for each of the plurality of decision nodes of the segmentation tree, receiving an alternate level data set having a second precision, and calculating an alternative level value to maintain the percentage split for each decision node, as recited in claim 40.

For at least the foregoing reasons, independent claims 1, 9, 17, 25, 37 and 40, and claims dependent therefrom, are allowable over the cited art.

Reconsideration of the application and allowance thereof are respectfully requested. In the event that the Examiner would like to discuss the aforementioned claims, or any other matter, the Examiner is invited to contact the undersigned representative at the telephone number set forth below.

Respectfully submitted,

HANLEY, FLIGHT & ZIMMERMAN, LLC
150 South Wacker Drive
Suite 2100
Chicago, Illinois 60606

April 6, 2009

/Peter J. Cesarz/

Peter J. Cesarz
Registration No. 61,190
Attorney for Applicants